

CLAIMS

What is claimed is:

- Sub B1
1. A method for communicating information in a network, comprising:
 - a) sending a request for information about a destination node from a source node to a server node that responds to such requests on behalf of the destination node;
 - b) forwarding the request from the server node to the destination node;
 - c) sending a response to the request from the destination node to the server node; and
 - d) forwarding the response from the server node to the source node.
 2. The method of claim 1, wherein sending a request for information about a destination node from a source node to a server node that responds to such requests on behalf of the destination node comprises sending an Next Hop Resolution Protocol (NHRP) resolution request from a NHRP capable source node to a NHRP server node that responds to such requests on behalf of the destination node.
 3. The method of claim 2, wherein forwarding the request from the server node to the destination node comprises forwarding the NHRP resolution request from the NHRP server node to the destination node.
- Sub B2

1 d) generating at the destination station a NHRP resolution reply providing
2 the internetwork layer address to NBMA subnetwork layer address resolution
3 information;

4 e) transmitting the NHRP resolution reply from the destination station to
5 the NHS; and

6 f) transmitting the NHRP resolution reply from the NHS to the source
7 station.

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1 7. The method of claim 6, wherein determining at the NHS to forward the
2 NHRP resolution request to the destination station further comprises determining
3 that the destination station previously transmitted a NHRP registration request to
4 the NHS requesting the NHS to forward any NHRP resolution request that
5 specified the internetwork layer address for the destination station to the
6 destination station.

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8 8. The method of claim 7, wherein determining that the destination station
9 previously transmitted a NHRP registration request to the NHS requesting the
10 NHS to forward any NHRP resolution request that specified the internetwork
11 layer address for the destination station to the destination station further
12 comprises determining that the destination station previously transmitted a NHRP
13 registration request to the NHS, the NHRP registration request specifying a
14 unique time/length/value (TLV) extension value that the NHS recognized as

1 requesting the NHS to forward any NHRP resolution request that specified the
2 internetwork layer address for the destination station to the destination station.

1 9. The method of claim 6, wherein determining at the NHS to forward the
2 NHRP resolution request to the destination station further comprises determining
3 that the NHS was previously configured to request the NHS to forward any
4 NHRP resolution request that specified the internetwork layer address for the
5 destination station to the destination station.

1 10. The method of claim 6, wherein determining at the NHS to forward the
2 NHRP resolution request to the destination station further comprises determining
3 that the NHS previously received a communication via an internetworking
4 protocol instructing the NHS to forward any NHRP resolution request that
5 specified the internetwork layer address for the destination station to the
6 destination station.

1 11. A method for communicating internetwork layer address to subnetwork
2 layer address resolution information between peer stations in a nonbroadcast,
3 multiple access subnetwork, comprising:
4 a) generating at a source station a next hop resolution protocol (NHRP)
5 resolution request to obtain internetwork layer address to subnetwork layer

1 address resolution information for a destination station, the NHRP resolution
2 request specifying the internetwork layer address for the destination station;
3 b) transmitting the NHRP resolution request to a next hop resolution
4 protocol server (NHS) within the nonbroadcast multiple access subnetwork that
5 serves the destination station;
6 c) determining at the NHS to forward the NHRP resolution request to the
7 destination station;
8 d) determining at the destination station whether to receive or reject the
9 NHRP resolution request forwarded from the NHS;
10 e) generating at the destination station a NHRP resolution reply providing
11 the internetwork layer address to NBMA subnetwork layer address resolution
12 information if the destination station determined to receive the NHRP resolution
13 request forwarded from the NHS;
14 f) transmitting the NHRP resolution reply from the destination station to
15 the NHS; and
16 g) transmitting the NHRP resolution reply from the NHS to the source
17 station.

1 12. The method of claim 11, wherein determining at the destination station
2 whether to receive or reject the NHRP resolution request forwarded from the NHS
3 comprises determining at the destination station whether to receive or reject the

1 NHRP resolution request forwarded from the NHS based on management
2 signaling.

1 13. The method of claim 11, wherein determining at the destination station
2 whether to receive or reject the NHRP resolution request forwarded from the NHS
3 comprises determining at the destination station whether to receive or reject the
4 NHRP resolution request forwarded from the NHS based on user configuration.

1 14. An article of manufacture comprising a computer readable medium having
2 computer readable program code means embodied thereon for communicating
3 information in a network, comprising:

4 computer readable program code means for receiving a request for
5 information about a destination node from a source node at a server node that
6 responds to such requests on behalf of the destination node;

7 computer readable program code means for forwarding the request from
8 the server node to the destination node;

9 computer readable program code means for receiving a response to the
10 request from the destination node at the server node; and

11 computer readable program code means for forwarding the response from
12 the server node to the source node.

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- 1 ~~15.~~ An article of manufacture comprising a computer readable medium having
2 computer readable program code means embodied thereon for communicating
3 internetwork layer address to subnetwork layer address resolution information
4 between peer stations in a nonbroadcast, multiple access subnetwork, comprising:
5 computer readable program code means at a next hop resolution protocol
6 server (NHS) within the nonbroadcast multiple access subnetwork that serves a
7 destination station, the computer readable program code means receiving a next
8 hop resolution protocol (NHRP) resolution request from a source station to obtain
9 internetwork layer address to subnetwork layer address resolution information for
10 a destination station, the NHRP resolution request specifying the internetwork
11 layer address for the destination station;
12 computer readable program code means for determining at the NHS to
13 forward the NHRP resolution request to the destination station;
14 computer readable program code means at the NHS for receiving from the
15 destination station a NHRP resolution reply providing the internetwork layer
16 address to NBMA subnetwork layer address resolution information; and
17 computer readable program code means at the NHS for transmitting the NHRP
18 resolution reply from the NHS to the source station.
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20 ~~16.~~ A method for communicating internetwork layer address to subnetwork
21 layer address resolution information in a nonbroadcast, multiple access
22 subnetwork, comprising:

1 address resolution information for a destination station, the NHRP resolution
2 request specifying an internetwork layer address for the destination station;
3 b) transmitting the NHRP resolution request to a next hop resolution
4 protocol server (NHS) within the nonbroadcast multiple access subnetwork that
5 serves a plurality of destination stations sharing the internetwork layer address;
6 c) determining at the NHS to forward the NHRP resolution request to one
7 of the plurality of destination stations according to an arbitration scheme;
8 d) generating at the one of the plurality of destination stations one of: a
9 NHRP resolution reply providing the internetwork layer address to NBMA
10 subnetwork layer address resolution information; and a negative NHRP resolution
11 reply that fails to provide the internetwork layer address to NBMA subnetwork
12 layer address resolution information;
13 e) transmitting the NHRP resolution reply from the one of the plurality of
14 destination stations to the NHS;
15 f) repeating c through e until one of: the NHRP resolution reply provides
16 the internetwork layer address to NBMA subnetwork layer address resolution
17 information; and the last of the one of the plurality of destination stations
18 transmits the NHRP resolution reply to the NHS; and
19 f) transmitting the NHRP resolution reply from the NHS to the source
20 station.
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18. An article of manufacture comprising a computer readable medium having computer readable program code means embodied thereon for communicating internetwork layer address to subnetwork layer address resolution information, comprising:

5 computer readable program code means for generating at a source station a next hop resolution protocol (NHRP) resolution request to obtain internetwork layer address to subnetwork layer address resolution information for a destination station, the NHRP resolution request specifying an internetwork layer address for the destination station;

10 computer readable program code means for transmitting the NHRP resolution request to a next hop resolution protocol server (NHS) within the nonbroadcast multiple access subnetwork that serves a plurality of destination stations sharing the internetwork layer address;

computer readable program code means for determining at the NHS to forward
15 the NHRP resolution request to a one of the plurality of destination stations according to an arbitration scheme;

computer readable program code means for generating at the one of the plurality of destination stations a NHRP resolution reply providing the internetwork layer address to NBMA subnetwork layer address resolution information;

20 computer readable program code means for transmitting the NHRP resolution reply from the one of the plurality of destination stations to the NHS; and

computer readable program code means for transmitting the NHRP resolution reply from the NHS to the source station.

4 19. A method for communicating information in a network, comprising:

5 a) receiving a request for information about a destination node from a
6 source node at a server node that responds to such requests on behalf of the
7 destination node;

8 b) forwarding the request from the server node to the destination node;

9 c) receiving a response to the request from the destination node at the
10 server node; and

11 d) forwarding the response from the server node to the source node.

20. A method for communicating internetwork layer address to subnetwork layer address resolution information in a nonbroadcast, multiple access subnetwork, comprising:

a) receiving at a next hop resolution protocol server (NHS) a next hop resolution protocol (NHRP) resolution request that was generated and transmitted by a source station to obtain internetwork layer address to subnetwork layer address resolution information for a destination station that is served by the NHS, the NHRP resolution request specifying the internetwork layer address for the destination station;

- b) determining at the NHS to forward the NHRP resolution request to the destination station;
- c) receiving an NHRP resolution reply providing the address to NBMA subnetwork layer address resolution information submitted by the destination station to the NHS; and
- d) transmitting the NHRP resolution reply from the NHS to the source station.

- b) determining at the NHS to forward the NHRP resolution request to the destination station;
- c) receiving an NHRP resolution reply providing the address to NBMA subnetwork layer address resolution information submitted by the destination station to the NHS; and
- d) transmitting the NHRP resolution reply from the NHS to the source station.

- b) determining at the NHS to forward the NHRP request to the destination station;
- c) receiving an NHRP resolution reply providing the address to NBMA subnetwork layer address resolution information submitted by the destination station to the NHS; and
- d) transmitting the NHRP resolution reply from the NHS to the source station.

- b) determining at the NHS to forward the NHRP resolution request to the destination station;
- c) receiving an NHRP resolution reply providing the address to NBMA subnetwork layer address resolution information submitted by the destination station to the NHS; and
- d) transmitting the NHRP resolution reply from the NHS to the source station.